

Thunder Tiger Ready^{mk3}

Assembly Manual



No.4591
Specifications:
Wing Span: 61.75" (1570 mm)
Wing Area: 605 sq.in. (39 dm)
Length: 47" (1200 mm)
Weight: 5.3 lbs. (2800 g)
Engine: 40-42 Req'd
Radio: 4CH Req'd

Warranty

This kit is guaranteed to be free from defects in material and workmanship at the date of purchase. It does not cover any damage caused by use or modification. The warranty does not extend beyond the product itself and is limited only to the original cost of the kit. By the act of building this user-assembled kit, the user accepts all resulting in liability for damage caused by the final product. If the buyer is not prepared to accept this liability, it can be returned new and unused to the place of purchase for a refund.

Notice: Adult Supervision Required

This is not a toy. Assembly and running this product requires adult supervision. Read through this manual completely and become familiar with the assembly of this airplane. Inspect all parts for completeness and damage. Browse www.thundertiger.com for more information or customer service if you encounter any problems.

JE6972

Items Needed

ITEMS REQUIRED FOR ASSEMBLY

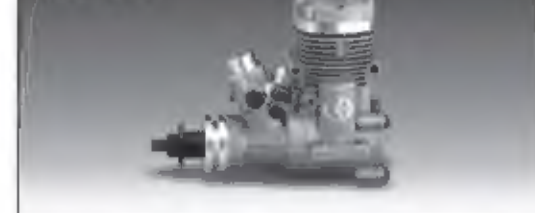
A checklist is also provided on the next column which will make shopping for these items easier.



No.9041



No.9141



Engine The Thunder Tiger GP-42 and PRO-46 are the ideal engines for this airplane. These engines are easy to start, require no special break in periods, are very easy to maintain and will last for years.



Adhesives You will need two types of adhesives for the Ready - Epoxy and Instant (cyanoacrylate) adhesives. We recommend that you purchase both 5-minute and 30-minute epoxy to cut down on assembly time, but you can get by with only 30-minute epoxy if time is no important. You will also need a small bottle of both "Thick" and "Thin" instant adhesives.



Tools Model assembly can be much easier if the proper tools are used. Therefore we have included in our checklist to above, a complete listing of all the tools we used to assemble our prototype models. As you will notice, many household tools can be utilized during construction.

Comprehensive Items Needed Check List

- 4-Channel Radio with 4 Standard Servos
- 5-Minute Epoxy (4 ounces or so)
- 30-Minute Epoxy (4 ounces or so)
- "Thin" Instant Adhesive (1/2 ounce)
- "Thick" Instant Adhesive (1/2 ounce)
- Hobby Knife and Blades
- Epoxy Mixing Sticks and/or Brushes
- Sandpaper (150 grit)
- Masking Tape
- Rubbing Alcohol
- Paper Towels
- Ruler
- 90 Degree Triangle
- Waxed Paper
- Fine-Point, Felt-Tip Pen
- Misc. Household Tools
- Drill and Bits (3/32", 1/8", 5/32", 15/32", 5/16" (2.4mm, 3mm, 4mm, 5.5mm, 8mm))



Flight Equipment There are several "support" items that you will need to purchase in order to get your engine running and your plane in the air. These are listed at the bottom.

Flight Equipment Needed Check List

- Foam Rubber Padding for the radio
- Stick on Lead Strip for balancing the plane
- 3 or 4 Props (see engine instructions)
- 10%-15% Glow Fuel
- Fuel Pump or Bulb
- Electric Starter or "Chicken Stick"
- Glow starter
- Extra Glow Plug(s)
- Silicon Tubing

ACCESSORIES



No.1263-65
Carry Master-Thunder Tiger offers a complete organizer of field equipment.

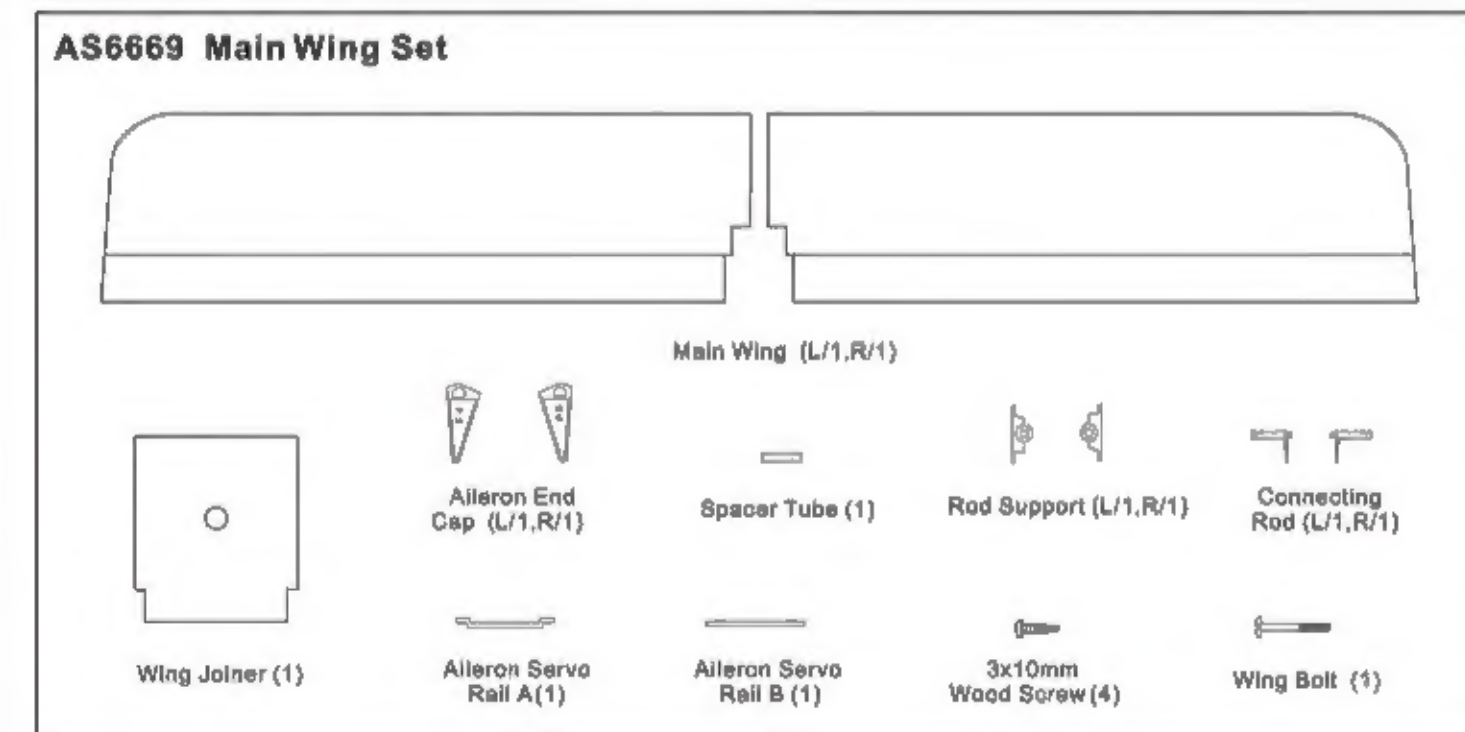
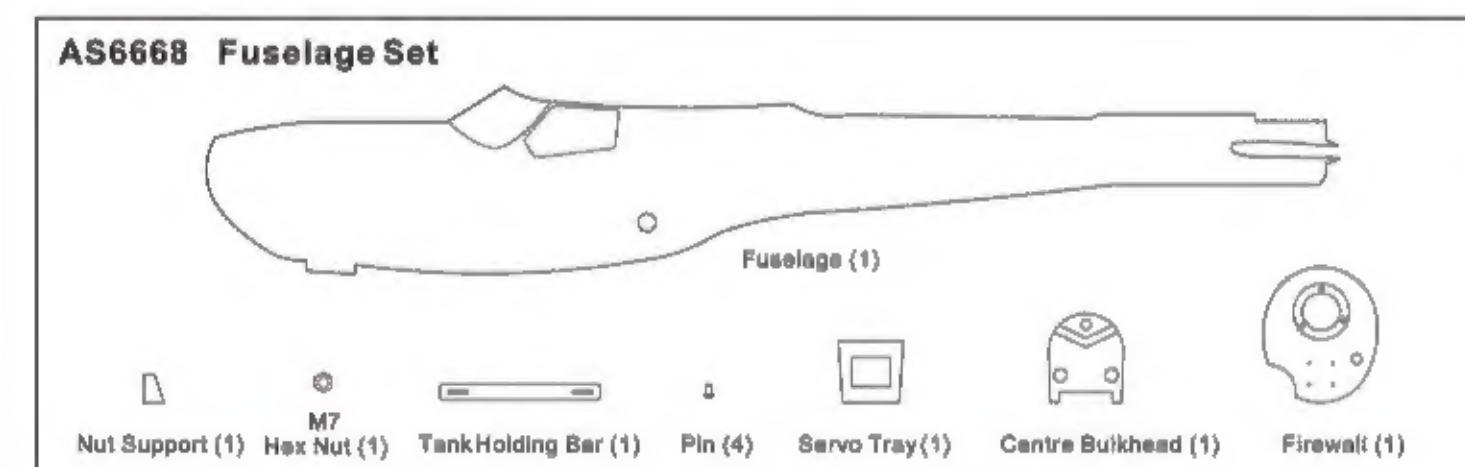


Engine Installation

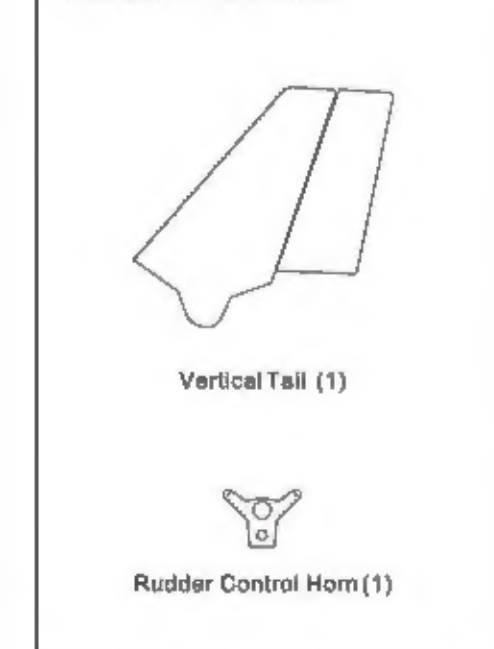
- PICTURE 1. Locate the spinner, engine prop nut and washer and prepare a suitable propeller for your engine.
- PICTURE 2. Place the engine on the engine mount then temporarily install the spinner backplate and propeller. Make sure the backplate does not contact the fuselage. The clearance is 2mm suggested. Make marks for the mounting hole.
- PICTURE 3. Remove the engine and engine mount then drill 2.4mm (3/32") hole on the marks. Locate the throttle pushrod and engine mounting screws n.11 3x18mm. Connect the throttle pushrod to the throttle lever. Bend the throttle pushrod as photo shown.
- PICTURE 4. Next install the engine on the engine mount. Trial to move the pushrod forward the backward to make sure the throttle moves smoothly. Adjust if necessary.
- PICTURE 5. Secure the engine on the engine mount firmly with furnished n.11 mounting screws. Use the muffler hole as the guide to drill a hole on the cowl. Enlarge the hole up to 6mm in diameter.
- PICTURE 6. Locate the muffler extension. Note: this extension fits to Thunder Tiger GP-42 only. Please check the engine manufacturer for the spare parts if it can not fit to your engine.
- PICTURE 10-11. Secure the muffler tightly with the enclosed 3x40mm muffler bolt and spring washer.
- PICTURE 12-13. Install the propeller and spinner backplate. Note the propeller must against the pin on the backplate. Adjust for a good engine starting angle.
- PICTURE 14. Secure the spinner with 3x12mm self-tapping screws.
- PICTURE 15. Connect the fuel tube correctly to the muffler and carburetor.



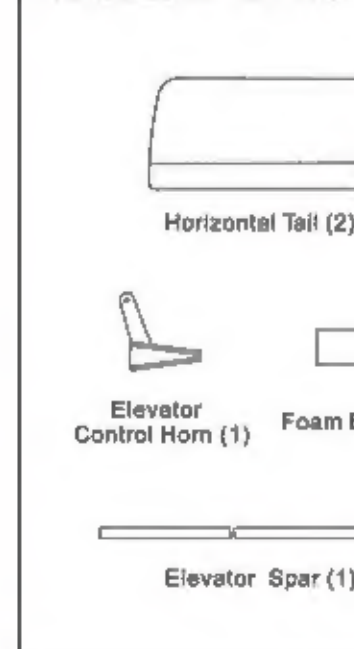
Parts Drawing



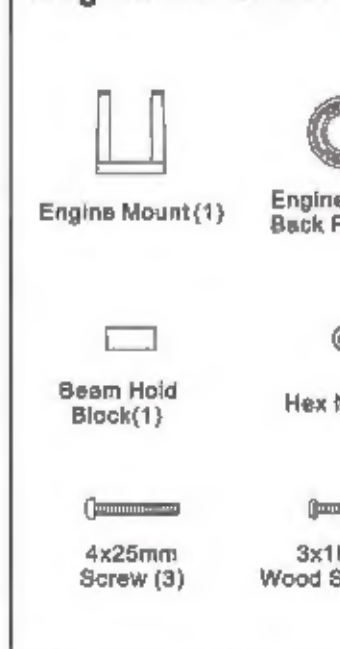
AS6670 Vertical Tail Set



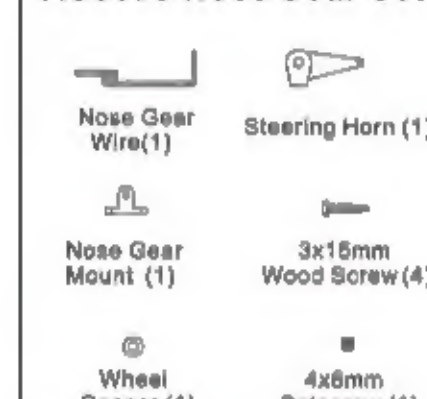
AS6671 Horizontal Tail Set



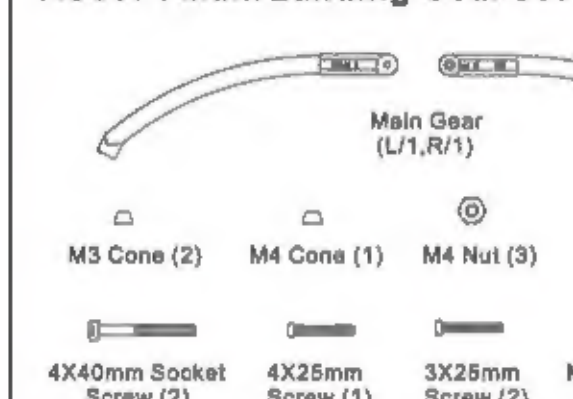
AS6672 Engine Mount Set



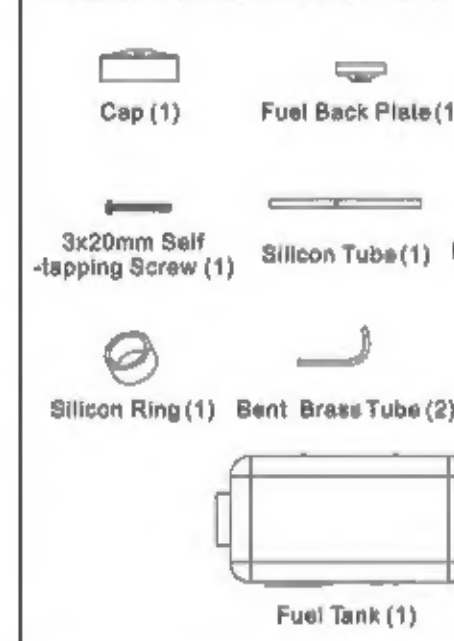
AS6673 Nose Gear Set



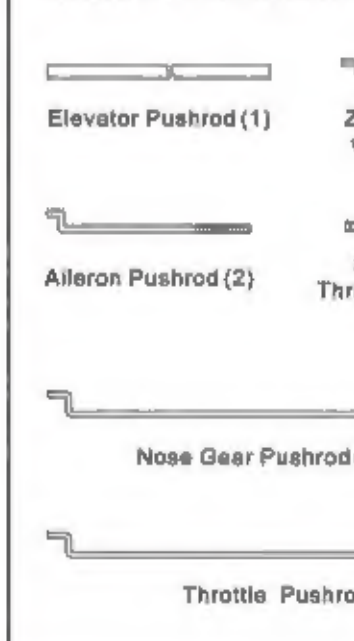
AS6674 Main Landing Gear Set



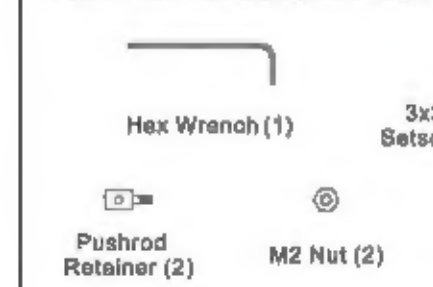
AS6678 220cc Fuel Tank



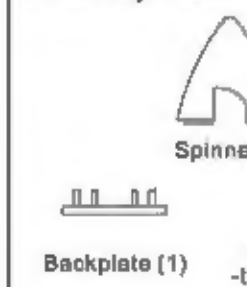
AS6677 Pushrods



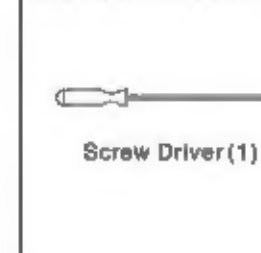
3169 EZ Connector Set



3222 Spinner



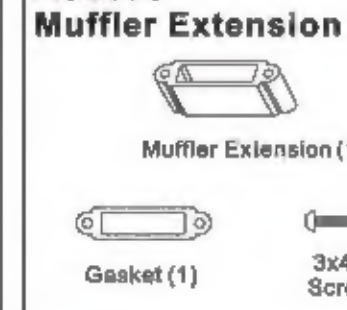
AS6675 Screw Driver



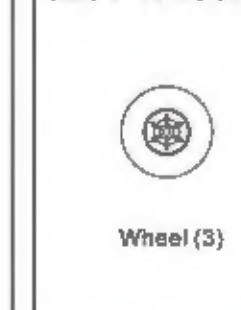
AS6679 Decal



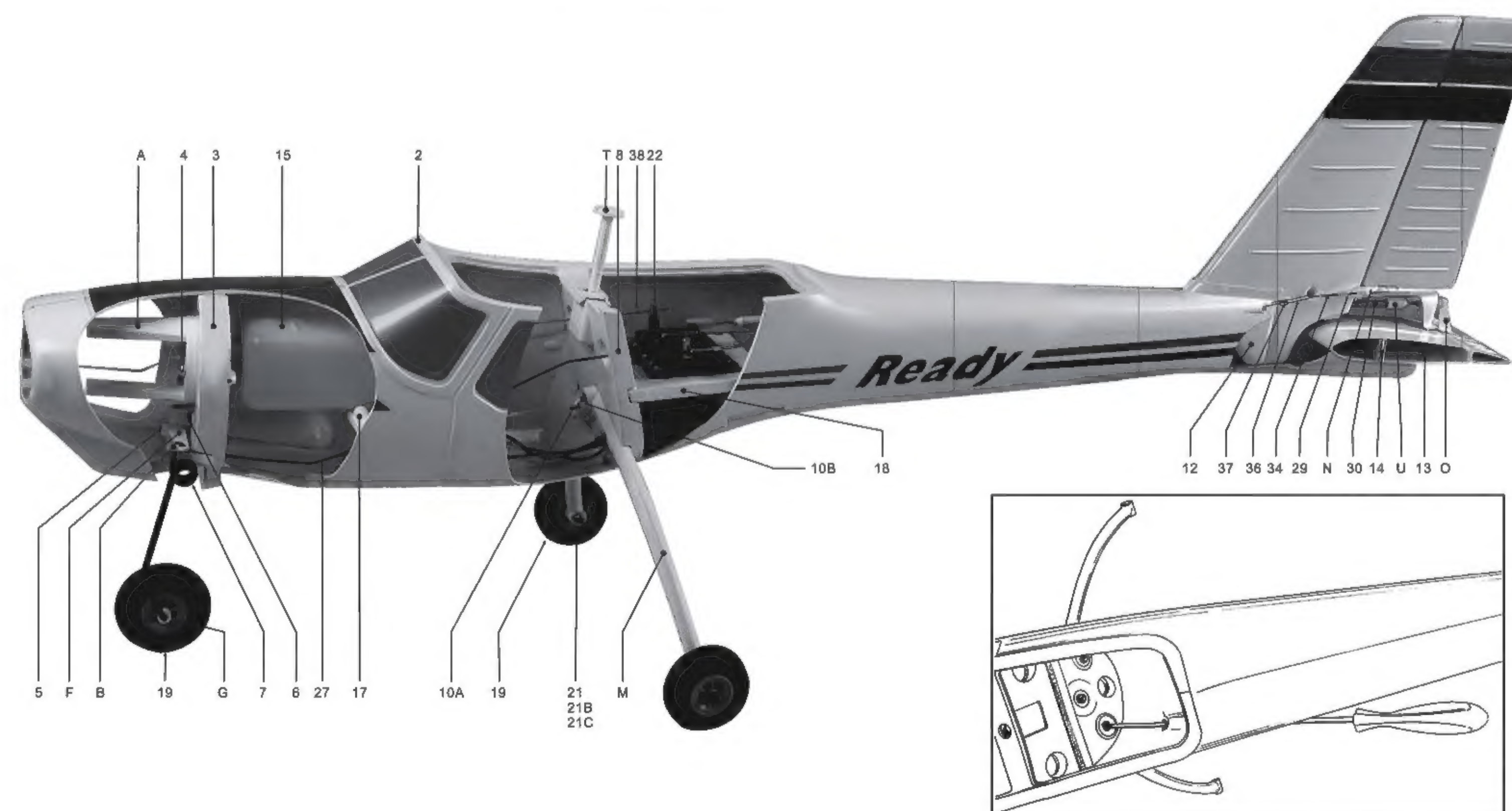
AS6676 Muffler Extension



3297 Wheel



Fuselage Assembly Illustration





Wing span 1,57 m
Wing surface 39 dm²
Weight ready to fly 2,8 kg
Motors 2T 6,5-8,3cc
Radio 4-5 channel



Ready^{mk3}

Building instruction

The **Ready** is a high wing model suitable for the beginner who wants to go one step further the basic motorglider trainer and try a high wing model easy to fly but able to perform all the aerobatics.

With the **Ready** thanks to our Quick Made System technology, that ensures perfect fitting pieces every time and also gives absolute beginners the opportunity to construct a plane without mistakes, you will be ready to fly after just a few working hours (4 to 8 depending on your skill), and you will not need special tools to build it; you will need to use cyanoacrylates (super glue) or epoxy glues so please take all the suggested manufacturer's precautions when using these substances.

When gluing the control horns to the moving surfaces pay attention not to spread cyano on the hinges as this excess glue may damage the hinges; we suggest you to use 5 minute epoxy.

Please try to not use cyanoacrylates activators as they may cause damage to the plastic used for the model.

First things to do

Trim the small burrs that may have been left from the moulding process: this is easily done with a sharp modelling knife and then rubbed over with 400 grit sand paper.

All of the pieces made in fibreglass reinforced nylon must be very well sanded in the areas to be glued: this is a must to ensure a good adhesion and overlooking this operation can seriously affect the strength of the joint (and the strength of your model too!!!)

WING

- PICTURE 1. Make a hole 7.5 or 8 mm in the wing joining piece n.25 where the moulded dots are, to allow the passage of the wing bolt T.
- PICTURE 2. Cut the two small plastic half circles away as seen in the photo.
- PICTURE 3. Using 5-minute epoxy to glue the left and the right aileron triangles (PS and PD) on to the ailerons and the spacer n.26 in its seat. Ensure the triangles are glued the correct way round. Pay attention to not spread the glue on the hinges.
- PICTURE 4. Push one wing into the wing joiner n.25 until the side of the servo well is against the wing rib and the leading edge of the wing and rib is just in the middle of the small hole. Using a pencil to draw a line around the wing exactly where the wing joiner ends. This will help you when gluing. Slip off the wing joiner from the left wing; sand the wing area defined between the pencil line and the ending rib and the rib with 200 grit sandpaper; sand also the whole inside area of the wing joiner. Cover sanded wing area and the corresponding inside part of the wing with a layer of epoxy (15 minutes or 30 minutes - your choice).
- PICTURE 5. Push the wing joiner onto the wing, paying attention that the pencil line should go back into the right position. You can use a spring clamp to keep everything in place until the epoxy dries. **PAY ATTENTION** to clean off any excess epoxy from the wing that may have been squeezed out. Let the epoxy cure and then repeat the same procedure for the right wing also spreading a layer of epoxy on the end rib.
- PICTURE 6-7. Glue the wing servo rails S and SS (giving prior thought to the size of your servo(s)) secure the rails with 3x10mm Wood screws n.40 - the aileron connecting rods Q (one left QS and one right QD), the aileron connecting rods supports R (one right and one left) using the photo as your reference.

FUSELAGE

- PICTURE 8. Drill four 3 mm holes for the firewall pins D in the front part of the fuselage and insert the four pins D gluing them in place with a drop the cyano.
- PICTURE 9. Drill two 8.5 mm holes to allow the passage for screwdriver (you will use these later to screw the main undercarriage) in the fuselage.
- PICTURE 10-11-12-13. Drill three 4 mm holes on the firewall needed to install the motor mount. Place the three M4 nuts in the shaped holes of the motor mount backplate C; spread a layer of epoxy on the motor mount backplate C and place it in the seat provided on the firewall. Temporarily install the motor mount using the three screws n.4. After the epoxy has cured dismantle the motor mount. Glue in position the landing gear mount plate E paying attention to put it in the right way.
- PICTURE 14-15. Install the firewall (complete with motor mount backplate) inserting it into the fuselage as in the photo and pushing it forward until it seats against the pins D. Glue it all along the perimeter with cyano or epoxy.
- PICTURE 16-17-18. Place the two cones with 3 mm hole I in the two lower positions of centre bulkhead 8 and glue with cyano; place the cone with 4 mm hole L in the higher position of centre bulkhead 8 and glue with cyano. Drill 3 and 4 mm holes as needed. Insert the M7 nut in the nut support H and glue the support to the bulkhead n.8. Check it is well glued.
- PICTURE 19-20-21. Place the completed bulkhead (as above) into position and glue it with cyano or epoxy. The recess for the landing gear should be looking forward and check for the right position (see picture 20-21-22).
- PICTURE 22. The ensemble should look like this. When satisfied glue with cyano.
- PICTURE 23-24. Install the front landing gear mount. This piece is not symmetrical and must be installed the right way (you have to read the letter B the right way) or its holes will not match with the ones on the bulkhead.
- PICTURE 25-26-27. Insert the M3 nuts n.10A and M4 n.10B into their seats on the landing gear legs M. Insert the legs through the ready made holes in fuselage taking care to leave the nuts towards the fuselage front and screw these in position. Please note that there is a left (marked S) and a right (marked D) leg.
- PICTURE 28. Insert the servo tray n.18 and glue with cyano or epoxy.
- PICTURE 29-30-31. Locate all parts for the Nose landing gear (n.7 - n.5 - n.22 - G - F - V). Place the landing gear in position by tightening the setscrew of the control horn F: be careful to check that the setscrew will be at the level of the recess grinded in the landing gear leg (see arrows on picture 30). Do not over tighten the setscrew or you will just ruin the thread in the control horn.
- PICTURE 32-33. Using a round file to enlarge the hole for the elevator pushrod in the back of fuselage so that it is at least 8 mm wide and 15 mm high.

ELEVATOR

- PICTURE 34-35. With a sharp knife cut off the two connecting rib covers on each half of the elevator to clear the elevator spar hole.
- PICTURE 36-37-38. With a pencil make a mark half way along the elevator spar n.14. **PAY ATTENTION** to gluing the elevator spar: if you do not insert the spar flat, the glue will not be evenly distributed. Spread 5 minute epoxy on both side of one half of the thin (5 mm) section of the main spar up to the halfway point; insert it flat through the hole (step 1). When inside turn it 90 degrees (step 2); align it on a table using the aligning block n.23 (step 3). Move it back and forth for about 5 mm two or three times to even distribute the epoxy (step 4). Wait for the epoxy to cure. Now repeat the process with the other half. Cover both the 5 mm sides of second half of the elevator spar n.14 with epoxy; insert it flat inside the second elevator half and turn through 90°; make sure the two elevator halves fit together and move it back and forth just as done before.
- PICTURE 39. Holding the two ribs together; join them using cyano all along the profile; pay attention not to spreading cyano on the elevator hinges. Join the two moving elevator parts inserting the elevator control horn O between them and glue it using 5 minutes epoxy checking that the control horn is at 90° to the elevator. Avoid spreading the glue on the hinges.
- PICTURE 40. Insert the elevator into its seat with the control horn facing upwards and place it in line with the fuselage, centre line checking that the elevator control horn will align with the middle of fuselage pushrod hole. Check that the elevator is at 90° to the fuselage and parallel to the wing. Also check with a rule that the two elevator ends are at the same distance from trailing edges of the wing; glue the elevator with epoxy or cyano. It may be helpful to use a spring clamp.

RUDDER

- PICTURE 41. Next with a sharp knife cut off the two protruding parts, one at the front bottom and the other at the back of the main rudder below the moving section on the bottom of the fixed rudder half (look at the arrows on the photo); these holes are for the elevator pushrod to go through.
- PICTURE 42-43. Fit the rudder control horn N into the seat provided on the moving section of rudder and glue in place with cyano. Note that the letter N must be toward the bottom.
- PICTURE 44. Cover the bottom of rudder (that will fit inside the fuselage/skid) with a good layer of 5 minutes epoxy and the square section that will be joined to the elevator. Insert the rudder into fuselage and double check that it is at 90° with the elevator and that the gap between the moving half of rudder and the fuselage looks as it does in the photo; keep in position until the glue has dried. Seal all the perimeter of the joint between rudder and the fuselage with cyano.

CONTROLS

We suggest that the controls are installed temporarily for testing and then dismantled before painting the model.

- PICTURE 45-47. Refer to your radio system and install the servos.

Rudder Control: Locate the cable and cut it into two pieces. Next drill a small hole in the fairing at the rear top fuselage then thread one end of the cable in the fuselage. Reach the cable from the center opening then apply tape to keep the tail end cable on fuselage. Now scale the brass tube n.37 and Z-bend and with hole n.32 then loop the cable as photo shown. (Thread the brass tube first, next thread the Z-bend end, go back to the brass tube again. Adjust the distance between the Z-bend and the tube then thread the cable through the brass tube again to make a circle as small as possible. Clamp the brass tube with pliers to lock the cable from loosening.) Do the same procedure on the other cable. Install the Z-bend and on the servo horn as photo shown but make sure two cables are cross each other inside the fuselage (the cable coming from right side must connect to left side of servo horn).

Locate the threaded end with hole n.34 and thread it in the clevis. Now snap the clevis on the rudder control horn, next thread the cable through the tube then to the hole on the thread end. Loop the wire which is same way as you did on the Z-bend end. Do both cables simultaneously and pull the cables tightly then clamp the tube. Adjust the clevis to get good tension and centered when servo is in neutral position, but make sure the thread end is at least 5mm in the clevis before you clamp the tube. Also make sure the brass tube will not contact the hole on fairing when servo works. If not, you will have to adjust the cable and tube to reach this.

Nose Gear Steering Control: Install the EZ connector n.33 on the rudder servo horn as you can see in the photo. You will have to remove the steering arm and connect the Z-bend end of pushrod; next insert the pushrod through the firewall then secure the steering arm in place. Next insert the other end of pushrod to the EZ connector. Adjust the nose gear then secure the pushrod in place with 3x3mm set screw.

Elevator Control: use the pushrod n.30. Elevator pushrod connector U. two threaded ends n.31, and two clevises n.29. Glue the connectors the two ends of the elevator pushrod, next thread the two threaded rods to the connector. Make sure the pushrod is long enough then apply the CA instant glue to secure the thread rod on connector.

Now thread the clevises on the threaded end, then snap the clevis on to the elevator control horn at the tail. Adjust the clevis and connect to the servo horn when elevator and servo are in neutral position. You may apply a small tube to keep the clevis from opening.

Throttle Control: Install the EZ connector on the servo horn first. Suggest to install on the second hole. Make sure the EZ connector is rotate freely but less gap. Remember to apply CA on the M2 nut so it will not come loose. Next locate the throttle pushrod n.38, connect the Z-bend end to the Engine throttle lever (check engine installation) then insert the other end through the firewall then connect to the EZ connector on the servo horn. Adjust the throttle pushrod and secure the pushrod with the 3x3mm set screw when satisfied.

- PICTURE 48-49. Assemble the tank as figure; install the silicon rubber ring n.16 on the tank and insert the tank in the opening in the middle of the motor mount. Insert the tank holding bar n.17 and glue it with cyano just under the tank. You may then use a rubber band tied to this bar to help to keep the tank in position.
- PICTURE 50-51. Assemble the tank as figure; install the silicon rubber ring n.16 on the tank and insert the tank in the opening in the middle of the motor mount. Insert the tank holding bar n.17 and glue it with cyano just under the tank. You may then use a rubber band tied to this bar to help to keep the tank in position.

FINISHING AND PAINTING

Install the receiver switch on the left-hand side of the fuselage (to avoid the exhaust oil). Dismantle the control sand the front landing gear that will have to be painted as a separate item.

Wash all of the model with soap and water to take away any grease; sand the entire surface to be painted with wet 400 grit sandpaper; you may avoid sanding the aileron, elevator and rudder moving part if you wash them well. Use any fuel resistant paint that you like; we have had good results with "Isotex" and "ABF". Reinstall the controls, install the front landing gear, apply the decals.

CENTER OF GRAVITY - CONTROL THROWS

The CG should be between 80 and 85 mm from the wing leading edge: please respect this measure!

Suggest control throw:	aileron	+/-	12 mm
	elevator	+/-	18 mm
	rudder	+/-	28 mm

These are just suggestions, feel free to change the control throw to suit your flying habits; you may also use exponential control (slightly) for elevator and aileron.

If you use the ailerons as flaps start with a maximum down throw of 6-8 mm.

We wish you many hours of happy flying with safe landings!

Ready kit part list

POS	Description	N.	Material	Remarks
1	Spinner set	1	Nylon	Spinner, backplate, 3x12mm screw 2PCS
2	Fuselage	1	HPT abs	
3	Firewall	1	HPT abs	
4	Screws and nuts 4 x 25 mm	3	Steel	motor mount screws
5	Setscrew 4 x 5 mm	1	Steel	for nose gear control horn
6	Wood screws 3 x 15 mm	4	Steel	for nose gear mount
7	Nose gear	1	Steel	
8	Centre bulkhead	1	HPT abs	
9	M7 nut	1	Steel	for the wing holding screw
10A	Phillips head screws with nuts 3 x 25 mm	2	Steel	main landing gear screws
10B	Phillips head screw with nuts 4 x 25 mm	1	Steel	main landing gear screw
11	Wood screws 3 x 18 mm	4	Steel	to install the motor on the motor mount
12	Rudder	1	HPT abs	
13	Elevator	2	HPT abs	the two pieces are identical
14	Elevator spar	1	Balsa	size 5 x 16 x 540mm medium hard balsa
15	Fuel tank 220 cc	1	HDPE	
16	Fuel tank rubber ring	1	Silicon rubber	size 25 x 30 mm
17	Tank holding bar	1	HPT abs	
18	Servo tray	1	HPT abs	
19	Wheels	3	Nylon & Rubber	63 mm diameter
20	Screws for main landing gear wheel axles	2	Steel	4x40 mm socket head
21B	Nuts for main wheels	2	Steel	M4 to be inserted in the nylon legs
21C	Locknut for main wheels	2	Steel	M4 self locking
22	Setscrew 3 x 3 mm	3		
23	Elevator spar aligning block	1	Foam	to help in aligning the elevator spar
24	Wings	2	HPT abs	HPT with white foam inside
25	Wing Joiner	1	HPT abs	
26	Spacer tube	1	ABS	cut to right size
27	Pushrod for nose wheel	1	Steel	1,7 x 380 mm
29	Clevis	1	Nylon	
30	Elevator pushrod	1	Wood	φ 5 x 600 mm
31	Elevator pushrod threaded end	2	Steel	

32	"Z" bend end with hole	2	Steel	
33	EZ connector	2	Steel	connector w/M2 nut & washer
34	Threaded end with hole	2	Steel	
35	Aileron pushrods with "Z" bend	2	Steel	threaded pushrod with "Z" bend
36	Rudder control cables	1	Steel	1,5 m to be cut in two
37	Rudder control cable stopper brass tube	4	Brass	
38	Throttle pushrod for motor control	1	Steel	1,5 x 532 mm
39	Ready decal set	1	Vinyl	Cut to shape - fuel resistant
40	Wood screw	4		3 x 10 mm
A	Motor mount	1	GFR Nylon	to suit 40 to 53 motors
B	Nose gear mount	1	GFR Nylon	
C	Motor mount backplate	1	GFR Nylon	
D	Firewall pins	4	GFR Nylon	
E	Nose gear blackplate	1	GFR Nylon	
F	Nose gear steering arm	1	GFR Nylon	
G	Wheel spacer	1	GFR Nylon	
H	Wing retaining nut support	1	GFR Nylon	
I	Main landing gear cone with 3mm hole	2	GFR Nylon	
J	Muffler extension	1		
K	Gasket	1		
L	Main landing gear cone with 4mm hole	1	GFR Nylon	
M	Main landing gear legs	2	GFR Nylon	two different pieces, one left S and one right D
N	Rudder control horn	1	GFR Nylon	
O	Elevator control horn	1	GFR Nylon	
P	Left and right aileron end cap	2	GFR Nylon	
Q	Aileron connecting rods	2	GFR Nylon	PS left PD right
R	Aileron connecting rod supports	2	GFR Nylon	QS left QD right
S	Aileron servo rail	1	GFR Nylon	
SS	Aileron servo rail	1	GFR Nylon	
T	Wing bolt	1	GFR Nylon	
U	Elevator pushrod connector	1	GFR Nylon	
V	Wheel collar	2		threaded for 3mm setscrew
W	Muffler bolt	2		3x40mm
Z	Long Phillips screwdriver	1		for the main landing gear screw

